PROPOFOL (DIPRIVAN™) CONTINUOUS INFUSION DURING MECHANICAL VENTILATION – ICU, ED

PURPOSE: To outline the management of the patient receiving a continuous propofol infusion.

SUPPORTIVE DATA: Propofol is a CNS depressant and is used to produce sedation for intubation, diagnostic procedures and management of increased intracranial pressure. Continuous propofol infusion is used only for mechanically ventilated patients. This protocol covers its use as a continuous infusion only and boluses given during continuous infusion. Propofol boluses should only be given when absolutely necessary (e.g. for extreme agitation) and to patients with low risk for hypotension. The desired effect is achieved in 1-3 minutes and the duration of action is 2-3 minutes. Most patients are alert in less than 15 minutes after the infusion is discontinued. Propofol has little amnesic and no analgesic effects. Continuous propofol infusion is not to be used for children under the age of 18.

Propofol must be titrated to a specific provider ordered score on the Richmond Agitation-Sedation Scale (RASS).

Propofol is contraindicated in patients allergic to eggs or soy products.

Propofol is a preservative free, lipid-based solution, which may result in increased risk of systemic infection. Therefore, propofol should be administered in a line by itself if at all possible.

Hypotension and bradycardia are common adverse effects. Propofol infusion syndrome is a serous complication and is characterized by dysrhythmia, metabolic acidosis, lipemia, hyperkalemia, rhabdomyolysis, hepatomegaly, cardiac failure and renal failure. There is an increased risk of this syndrome following prolonged high dose infusion (greater than 80 mcg/kg/min for greater than 48 hours).

Infiltration of propofol into the tissues can cause serious injury necessitating surgery. If infiltration is noted, the nurse should notify the provider immediately so that the medication can be withdrawn from the tissues and if necessary, a surgical consult can be made.

ASSESSMENT:

1. Verify patient is on a mechanical ventilator prior to initiating infusion.
2. Determine concentration and verify correct dose upon initiation, within 1 hour of assuming care of the patient, and with each dose change.
3. Assess the following immediately prior to initial administration and minimum of every hour:
   - Vital signs (VS) and oxygen saturation
   - Presence of dysrhythmias
   - Pain score
4. Assess VS and oxygen saturation prior to and after each bolus or titration.
5. Assess for redness/swelling at peripheral I.V. site immediately following initiation of infusion and a minimum of every 2 hours
6. Assess sedation level by obtaining RASS score:
   - A minimum of every 2 hours
   - Prior to initiation and prior to each titration or bolus to document justification for initiation/titration/bolus.
     Note: The RASS score may not be documented more than 30 minutes prior to initiation, titration or bolus.
7. Assess urine for color, and clarity a minimum of every 4 hours during infusion.
8. Assess the following labs as drawn:
   - Triglycerides (obtain baseline and monitor every 24 hours)

- Arterial and venous blood gases
- Urinalysis
- Electrolytes

ADMINISTRATION/ TITRATION:

9. Administer propofol with the following intravenous fluids ONLY:
   - D_5W, $D_5½$ NS, $D_5¼$ NS, Lactated Ringers
10. Administer I.V. propofol as ordered. Order to include:
    - Desired RASS score
    - Incremental dosage increase or decrease in dose based on RASS score
    - Maximum rate of infusion (usually not to exceed 50 mcg/kg/minute, however, up to 80 mcg/kg/minute may be required)
    - Route
11. Ensure that propofol concentration is 10 mg per mL.
12. Administer via central line when possible.
13. Infuse drug as ordered. The following are recommended dosages:
    - Administer in mcg/kg/min
    - Start at 5 mcg/kg/min
    - Increase rate by 5 mcg/kg/min every 5 minutes until desired sedation level or maximum dose is achieved
    - Titrate within ordered parameters while continuously monitoring VS and hemodynamics.
14. Use bolus function on Guardrails to administer propofol bolus (as ordered by the provider). ED: Each bolus must be ordered by the provider; prn orders are not accepted.
    - RNs may only administer a propofol bolus if patient is already on a propofol infusion.
    - Usual bolus dose is 0.03-0.15 mg/kg over 3-5 minutes (maximum dose 50 mg)

DISCONTINUATION:

15. Decrease infusion as ordered by 5-10 mcg/kg/min every 5-10 minutes.
16. Stop infusion as ordered 10 to 15 minutes prior to extubation.

SAFETY:

17. Maintain strict aseptic technique during tubing change and administration.
18. Change tubing and discard unused portion every 12 hours.
19. Ensure the following:
    - Infusion pump is used for administration of continuous infusion
    - Drug compatibility

REPORTABLE CONDITIONS:

20. Discontinue infusion and notify provider immediately for the following:
    - Significant change in VS or oxygen saturation
    - Dysrhythmias
21. Notify provider for:
    - Inability to achieve/maintain desired effect within ordered parameters
    - Increased agitation
    - Significant change in laboratory values
    - Dark brown or red urine
    - Allergic response
    - Signs/symptoms of infection
    - Continuous burning at peripheral I.V. site

PATIENT/FAMILY TEACHING:

22. Instruct patient/family regarding:
    - Purpose of the drug
    - Possible side effects

ADDITIONAL STANDARDS:

23. Refer to the following as indicated:
    - Confused Patient
    - Fall/Injury Prevention
    - Intravenous Therapy
    - Mechanical Ventilation
    - Pain Management

DOCUMENTATION:

24. Document in accordance with "documentation standards".
25. Document infusion and bolus dosages in medication administration record.

Richmond Agitation Sedation Scale (RASS) *

Score	Term	Description	
+4	Combative	Overtly combative, violent, immediate danger to staff	
+3	Very agitated	Pulls or removes tube(s) or catheter(s); aggressive	
+2	Agitated	Frequent non-purposeful movement, fights ventilator	
+1	Restless	Anxious but movements not aggressive vigorous	
0	Alert and calm		
-1	Drowsy	Not fully alert, but has sustained awakening (eye-opening/eye contact) to *voice* (≥10 seconds)	Verbal Stimulation
-2	Light sedation	Briefly awakens with eye contact to *voice* (<10 seconds)	Verbal Stimulation
-3	Moderate sedation	Movement or eye opening to *voice* **(but no eye contact)**	Verbal Stimulation
-4	Deep sedation	No response to voice, but movement or eye opening to *physical* stimulation	Physical Stimulation
-5	Unarousable	No response to *voice or physical* stimulation	Physical Stimulation

Procedure for RASS Assessment

1. Observe patient
   a. Patient is alert, restless, or agitated. **(score 0 to +4)**
2. If not alert, state patient's name and *say* to open eyes and look at speaker.
   b. Patient awakens with sustained eye opening and eye contact. **(score –1)**
   c. Patient awakens with eye opening and eye contact, but not sustained. **(score –2)**
   d. Patient has any movement in response to voice but no eye contact. **(score –3)**
3. When no response to verbal stimulation, physically stimulate patient by shaking shoulder and/or rubbing sternum.
   e. Patient has any movement to physical stimulation. **(score –4)**
   f. Patient has no response to any stimulation. **(score –5)**

* Sessler CN, Gosnell M, Grap MJ, Brophy GT, O'Neal PV, Keane KA et al. The Richmond Agitation-Sedation Scale: validity and reliability in adult intensive care patients. Am J Respir Crit Care Med 2002; 166:1338-1344.

* Ely EW, Truman B, Shintani A, Thomason JWW, Wheeler AP, Gordon S et al. Monitoring sedation status over time in ICU patients: the reliability and validity of the Richmond Agitation Sedation Scale (RASS). JAMA 2003; 289:2983-2991.

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LAC+USC Clinical Resources: Micromedix and UptoDate drug info (Lexi-comp)

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